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(71) Applicant (for all designated States except US): THE PROCTER & GAMBLE COMPANY [US/US]; One Procter & Gamble Plaza, Cincinnati, OH 45202 (US).			
(72) Inventor; and (75) Inventor/Applicant (for US only): RAIDEL, Maria [DE/DE]; Ilzstrasse 88, D-90451 Nürnberg (DE).			
(74) Agents: RAU, Manfred et al.; Königstrasse 2, D-90402 Nürnberg (DE).			
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(54) Title: CORRUGATED TOP LAYER FOR ABSORBENT ARTICLES			
(57) Abstract			
<p>An absorbent sanitary product for the absorption of body liquids consisting of a liquid-proof covering layer (underwear protecting foil 1) on the back, a liquid-permeable covering layer (9) on top and an absorbent body (2) inserted between back and top covering layer (9, 1). The top covering layer (9) is equipped with two or more folds (10) on the area within the absorbent body, which folds (10) follow the longitudinal direction of the product.</p>			

## CORRUGATED TOP LAYER FOR ABSORBENT ARTICLES

The invention relates to an absorbent sanitary product for the absorption of body fluid, such as sanitary napkins, diapers, incontinence articles or the like, with the features mentioned in the preamble of claim 1.

Sanitary products of this type are well-known in a large variety. They are all provided with a liquid-proof covering layer on the back and a liquid-permeable covering layer on the top with an absorbent body inserted between these two layers.

The covering layer on the back usually consists of a thin polyethylene foil. The liquid-permeable covering layer is mostly of nonwoven material, but perforated foils can also be used.

Normally the absorbent body is produced of cellulosic flocs or so-called air-laid-material.

In addition to the basic absorptive capacity of the absorbent body the product's technical features of the body-facing covering layer such as the tactile softness, absorbing time in relation to the body liquids, the distribution over the sanitary product and the rewet properties are of vital importance. The nonwoven covers normally used for the body-facing cover layer are comparable in most of the above-mentioned features.

The previously mentioned perforated foils have been improved in their absorptive capacity and in the visual impression after admission of menstruation liquid for instance, whereas impairments might occur by the plastic-like character of the perforated foils which causes perspiration.

Furthermore the folds in most areas of the covering layer built a spacing between themselves and the absorbent body underneath, which improves both the absorptive or penetrating action of the body liquid into the absorbent body and the rewet properties. The visual impression after admission of for instance menstruation liquid will also be improved because raised folded areas are not in contact with the liquid-soaked absorbent body. The flexibility of the folds will also have an effect on the softness of the body-facing surface of the sanitary product thus providing a higher wearing comfort and the natural comfort and the natural touch.

Due to the fixing of folds these are stabilized in such a manner, that the created positive effects will remain, even after storage in pressed condition and over an extended wearing period.

Besides according to claim 1 the foot area of the folds can be directly fastened by glueing or welding on the absorbent body or on a support layer which is inserted between the covering layer and the absorbent body. This support layer helps to improve the functional features of the folds regarding the further transmission of liquid and the rewet properties.

Claims 2 and 3 indicate advantageous dimensional ranges for the folds.

According to the preferred embodiment of claim 4 more folds can be provided to be spread over the entire width of the absorbent body's surface. This results in a maximum product improvement.

Optionally the folds can only be arranged in stripes on the absorbent body's surface, which run along the margins and/or in the center (claim 5).

Additional features, details and advantages of the invention can be taken from the following description, in which various embodiments of the invention are explained referring to the attached drawings.

The embodiments according to Fig. 3 and 5 are provided with lateral wings 12, which are formed by overlapping flaps 13, 14 being connected to the lateral margins of covering layer 9 on the front and covering layer 15 on the back. The covering layer 15 might be of nonwoven material such as the case in the embodiment shown in Fig. 3, which shall be provided with a separate underwear protecting foil 1. The covering layer can also consist of liquid-proof material, for instance of polyethylene foil, thus taking over the underwear protecting foil's function and omitting it.

Now the different configurations of folds used in illustrated sanitary napkins shall be explained in more detail.

The folds 10 are formed by a suitable folding device in the sanitary napkin's production machine so that the foot areas 16 are located on support layer 7 with a spacing of 1 to 20 mm in the transversal direction of the sanitary napkin. A spacing of 3 to 5 mm has proven to be most practicable. The foot areas 16 are attached to the support layer 7 by means of longitudinal glue strips 17, for instance of spray adhesive. Between each adjacent foot area 16 the fold 10 stands upright with a height H ranging from 1 to 20 mm. The most practicable values for the height were also in the area of 3 to 5 mm. The foot width F defined by the glue strips 17 can vary from 0.2 to 10 mm depending on the spacing A and the height H, whereas it must be considered that the maximum foot width F is half the spacing A. With spacing A and height H in the range of 3 to 5 mm, foot widths of 0.5 to 1 mm proved to be successful.

In the embodiments shown in Fig. 1 through 3 eight folds are provided evenly spread over the entire width of the absorbent body's surface, working with a spacing A of approx. 6 mm between the folds.

In the embodiment shown in Fig 4 within two lateral strips 18 two folds 10, respectively, are provided, which run in the longitudinal direction of the sanitary napkin and which have a spacing A and height H of approx. 6 mm. The remaining center strip 19 between both lateral strips

## Claims

1. An absorbent sanitary product for the absorption of body liquids, especially sanitary napkins, diapers, incontinence napkins or similar, with

- a liquid-proof covering layer (1) on the back,
- a liquid-permeable covering layer (9), preferably of nonwoven material, on the top and
- an absorbent body (2) inserted between the back and top covering layer (9, 1)

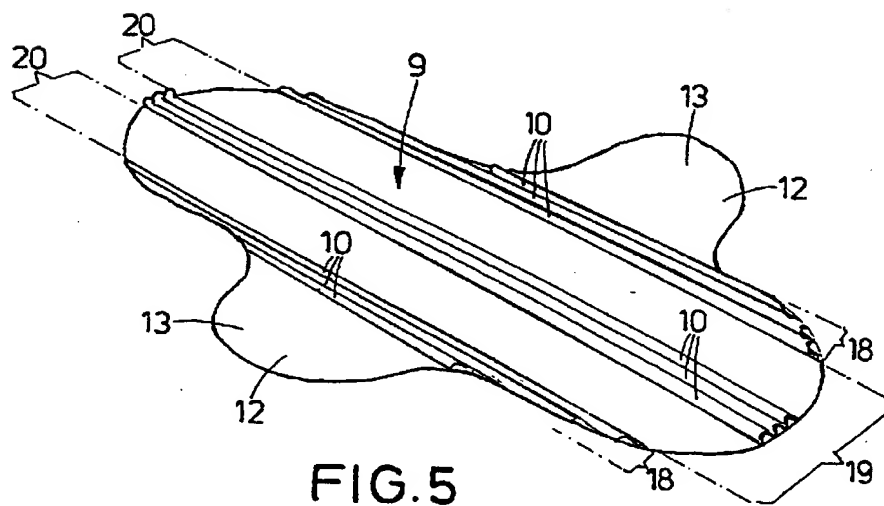
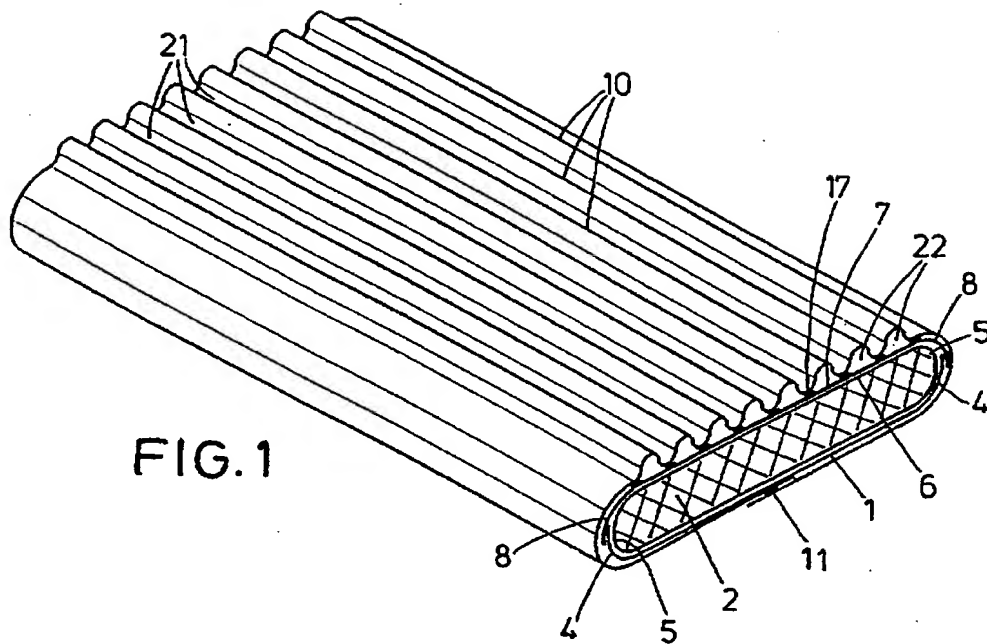
characterized in that the top covering layer (9) in the area of the absorbent body (2) is arranged in two or more folds (10) following the longitudinal direction of the product, that the foot areas (16), directing towards the absorbent body (2) of the folds (19), are attached to the absorbent body (2) or to a support layer (7) inserted between the absorbent body (2) and the top covering layer (9) and that the foot areas (16) of the folds (19) are glued (glue strips 17) or welded on the absorbent body (2) or the support layer (7) over a width (foot width F) of preferably  
0.2 - 10 mm.

2. A sanitary product according to claim 1, characterized in that the foot areas (13) of two adjacent folds (19) are fixed with a mutual spacing (A) of 1 - 20 mm.

3. A sanitary product according to claim 1 or 2, characterized in that the height (H) of the folds (10) is 1 - 20 mm in no-load condition.

4. A sanitary product according to one of the claims 1 - 3, characterized in that several, preferably 5 to 25 folds (10) are arranged over the entire width of the surface of the absorbent body (6).

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# INTERNATIONAL SEARCH REPORT

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PCT/EP 95/02466

**A. CLASSIFICATION OF SUBJECT MATTER**  
IPC 6 A61F13/15

According to International Patent Classification (IPC) or to both national classification and IPC

**B. FIELDS SEARCHED**

Minimum documentation searched (classification system followed by classification symbols)  
IPC 6 A61F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	GB,A,2 023 067 (COLGATE PALMOLIVE COMPANY) 28 December 1979 see the whole document ---	1-4
X	WO,A,91 11161 (SMITH & NEPHEW) 8 August 1991 see page 23, last paragraph - page 27, paragraph 1; figures; examples ---	1-4
X	EP,A,0 529 641 (UNI CHARM CORPORATION) 3 March 1993 see the whole document ---	1-4
X	EP,A,0 321 985 (KIMBERLY-CLARK CORPORATION) 28 June 1989 see column 5, line 48 - column 11, line 12; figures --- -/-	1-4

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

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Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2  
NL - 2280 HV Rijswijk  
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,  
Fax (+31-70) 340-3016

Authorized officer

Douskas, K

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Information on patent family members

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